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# Guidance for Industry

## Dosage Delivery Devices for OTC Liquid Drug Products

### *DRAFT GUIDANCE*

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For questions regarding this draft document contact Spencer Salis at 301-796-3327.

**U.S. Department of Health and Human Services  
Food and Drug Administration  
Center for Drug Evaluation and Research (CDER)  
November 2009**

**Compliance**

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## Dosage Delivery Devices for OTC Liquid Drug Products

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**U.S. Department of Health and Human Services  
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## Guidance for Industry<sup>1</sup>

# Dosage Delivery Devices for OTC Liquid Drug Products

This draft guidance, once finalized, will represent the Food and Drug Administration's (FDA's) current thinking on this topic. It does not create or confer any rights for or on any person and does not operate to bind FDA or the public. You may use an alternative approach if it satisfies the requirements of the applicable statutes and regulations. If you want to discuss an alternative approach, contact the FDA staff responsible for implementing this guidance. If you cannot identify the appropriate FDA staff, call the appropriate number listed on the title page of this guidance.

## I. INTRODUCTION

This document is intended to provide guidance to firms that are manufacturing, marketing, or distributing over-the-counter (OTC) liquid drug products (e.g., elixirs, suspensions, solutions, syrups) that are packaged with dosage delivery devices (e.g., calibrated cups, droppers, syringes, spoons).<sup>2</sup> Because written, printed, or graphic matter appearing on dosage delivery devices packaged with OTC liquid drug products is considered labeling, such markings on these devices must not be false or misleading and must be clear and consistent with the drug product's directions for use. (See Sections 201(m), 502(a) and 502(f)(1) of the Federal Food, Drug, and Cosmetic Act).

FDA's guidance documents, including this guidance, do not establish legally enforceable responsibilities. Instead, guidance documents describe the Agency's current thinking on a topic and should be viewed only as recommendations, unless specific regulatory or statutory requirements are cited. The use of the word *should* in Agency guidances means that something is suggested or recommended, but not required.

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<sup>1</sup> This guidance has been prepared by the Center for Drug Evaluation and Research (CDER) at the Food and Drug Administration.

<sup>2</sup> This guidance is not intended to address the adequacy of dosage delivery devices to deliver the labeled dosage. It is the responsibility of the manufacturers, packers, and distributors of these liquid drug products packaged with dosage delivery devices to ensure that the accompanying dosage delivery devices accurately deliver the doses identified by the measurements. FDA may issue additional guidance regarding the adequacy of dosage delivery devices to deliver the labeled dosage and to ensure that consumers can properly use dosage delivery devices that accompany OTC liquid drug products.

37 **II. BACKGROUND**

38  
39 Many OTC liquid drug products are packaged with dosage delivery devices intended to facilitate  
40 proper dispensing of the product by the patient, parent, or caregiver. In most cases, these devices  
41 have calibrated units of measure marked on the device (e.g., teaspoon, tablespoon, or milliliter)  
42 that are intended to ensure proper measurement of the appropriate dose. However, in many  
43 cases, OTC liquid drug products in the marketplace are packaged with dosage delivery devices  
44 that bear markings that are inconsistent with the labeled dosage directions. For example, some  
45 may contain superfluous markings or may be missing necessary markings. The Agency also is  
46 aware that some people typically do not use dosage delivery devices provided with OTC drug  
47 products, and consumers have reported some difficulties measuring OTC liquid medications for  
48 their children with provided dosage delivery devices. These difficulties may lead to consumers  
49 using less accurate means to give their children analgesics, cough and cold, and other common  
50 OTC liquid medications, e.g., household spoons.

51  
52 There have been numerous reports of accidental overdose that were attributed, in part, to  
53 markings on measured dosage cups for OTC liquid drug products that were misleading or  
54 incompatible with the labeled dosage directions for use.

55  
56 FDA is issuing this guidance because of ongoing safety concerns about the serious potential for  
57 accidental drug overdoses of OTC liquid drug products that can result from the use of dosage  
58 delivery devices with markings that are inconsistent or incompatible with the labeled dosage  
59 directions for OTC drug products. FDA is especially concerned because OTC liquid drug  
60 products are frequently intended to be used with pediatric populations.

61  
62  
63 **III. REGULATORY/POLICY DISCUSSION**

64  
65 **A. Statutory Requirements and Regulatory History**

66  
67 Section 502 of the Federal Food, Drug, and Cosmetic Act (FFDCA) (21 U.S.C 352) states that a  
68 drug is considered to be misbranded:

- 69  
70 (a) if its labeling is false or misleading in any particular [or] . . .  
71 (f) unless its labeling bears (1) adequate directions for use . . . .

72  
73 Section 201(m) of the FFDCA further defines labeling as “all labels and other written, printed, or  
74 graphic matter (1) upon any article or any of its containers or wrappers, or (2) accompanying  
75 such article” (21 U.S.C 321(m)). The Agency considers any written, printed, or graphic matter,  
76 including measurements on dosage delivery devices, packaged with OTC liquid drug products to  
77 be labeling. FDA has issued notices and Warning Letters that cite misbranding violations under  
78 section 502(a) of the FFDCA (21 U.S.C. 352(a)) when markings on dosage delivery devices are  
79 inconsistent with the labeled dosage directions. Examples include the following:

- 80  
81 • On December 9, 1991, FDA issued a Compliance Notice to alert all drug establishments that  
82 were registered with the Agency to review the labeling of all drug products marketed with an

83 accompanying dosage delivery device to determine if the product's labeling was compatible  
84 with the markings on the dosage device, and make corrections where necessary.

85  
86 In this notice, FDA said that dosage delivery devices that had markings inconsistent with the  
87 product's labeling rendered the drug product misbranded under 21 U.S.C. 352(a).  
88

- 89 • On January 21, 1992, FDA issued a Public Health Announcement warning parents against  
90 the inadvertent overdosing of children with liquid OTC medications for colds and flu.
- 91 • Between November 1991 and January 1992, FDA issued Warning Letters to five firms that  
92 were marketing OTC liquid drug products with dosage delivery devices that were not  
93 compatible with the products' labeled dosage directions. Those letters cited violations of  
94 section 502(a) of the FFDCA (21 U.S.C. 352(a)) because the markings on the dosage cups  
95 packaged with the products were misleading within the context of the labeled directions for  
96 use. Additionally, eight firms initiated recalls of over 980,000 retail units nationwide of  
97 OTC oral liquid drug products that had misleading or incompatible dosage delivery devices  
98 during the same time period. Since January 1992, several other firms have conducted large-  
99 scale recalls of OTC oral liquid drug products with misleading or incompatible dosage  
100 delivery devices.
- 101 • On January 17, 2008, FDA issued a Public Health Advisory recommending that when giving  
102 OTC cough and cold medicines to children ages two years and older, parents and caregivers  
103 use only the measuring spoons or cups that come with the medicine or those made specially  
104 for measuring drugs.

105 Despite these efforts, through routine monitoring and surveillance programs, FDA has become  
106 aware that an increasing number of OTC liquid drug products have dosage delivery devices that  
107 are incompatible with labeled product dosage directions.  
108

109 In addition to misbranding under section 502(a) of the FFDCA (21 U.S.C. 352(a)), when dosage  
110 delivery devices packaged with OTC liquid drug products fail to bear a mark or markings  
111 consistent with the labeled dosage directions, the products also lack adequate directions for use  
112 and are misbranded under section 502(f)(1) of the FFDCA (21 U.S.C. 352(f)(1)).  
113

## 114 **B. Recommendations**

115

116 The Agency makes the following recommendations for OTC liquid drug products:  
117

- 118 • Dosage delivery devices should be included for all OTC drug products that are liquid  
119 formulations.
- 120 • These devices should have calibrated units of measure marked on the device (e.g. teaspoon,  
121 tablespoon, or milliliter) that are the same as the units of measure specified in the labeled  
122 dosage directions on any outside packaging (carton labeling), bottle, and any accompanying  
123 written instructions.
- 124 • If units of measure are abbreviated on the dosage delivery device, the abbreviation used on  
125 the device should be the same abbreviation used in the labeled dosage directions, outside  
126 packaging (carton labeling), bottle, and any accompanying written instructions.

- 127 - International or national standards for abbreviations should be used. For example,  
128 milliliters should be abbreviated as “mL” and teaspoons abbreviated as “tsp,” and less  
129 common or nonstandard used abbreviations should be avoided.
- 130 - Abbreviations should be defined on the dosing device (e.g., tsp = teaspoon) and, if  
131 they are not, should be defined in the labeled dosage directions, outside packaging  
132 (carton labeling), bottle, and any accompanying written instructions.
- 133 • Any decimals or fractions included on dosage delivery devices should be listed as clearly as  
134 possible.
    - 135 - Use leading zeroes before decimal points (“0.4” not “.4”) to avoid 10-fold dosing  
136 errors.
    - 137 - Use smaller font size for numerals in fractions (“½” not “1/2”) to avoid interpreting  
138 “1/2” as “1 or 2.”
  - 139 • Dosage delivery devices should not bear extraneous or unnecessary markings that may be  
140 confusing.
  - 141 • Manufactures should try to ensure that the dosage delivery devices are used only with the  
142 products with which they are included. Possible ways of accomplishing this are to either:
    - 143 - Include a statement on the dosage delivery device and the drug product’s bottle  
144 and/or carton labeling that only the provided dosage delivery device is to be used with  
145 the particular OTC drug product with which it is included. This information can also  
146 be included under the Directions Section of the product’s Drug Facts panel
    - 147 - Devise a mechanism to secure the dosage delivery device to the drug product, such as  
148 creating an integrated dosing device.
  - 149 • Dosage delivery devices should not be significantly larger than the largest dose described  
150 in the labeled dosage directions and should permit clear measurement and delivery of the  
151 smallest labeled dosage.<sup>3</sup>
  - 152 • The markings on dosage delivery devices should be clearly visible and not be obscured when  
153 the product is added to the device.

154 The Agency also recommends that firms conduct usability studies to ensure that dosage delivery  
155 devices are easily understood and accurately used by consumers.<sup>4</sup>

156  
157 Because the Agency regards the markings on these delivery devices as labeling, FDA considers  
158 their failure to bear markings consistent with the labeled dosage directions to cause the drug  
159 product to be misbranded. For example, if the bottle and/or carton labeling for a drug product  
160 contains dosage directions that are written exclusively in terms of a specific unit of measure, the  
161 accompanying dosage delivery device should contain markings in the same unit of measure. The  
162 following examples illustrate situations that would render the products misbranded:

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<sup>3</sup> For concentrated acetaminophen infant drops, the Agency recommends that dosage delivery devices should also permit clear measurement and delivery of the smallest intended dosage consistent with professional labeling for infants under 2 years of age.

<sup>4</sup> Although this Guidance is not intended to address the adequacy of dosage delivery devices to deliver the labeled dosage, the Agency may consider issuing future guidance to industry that addresses topics such as: age, weight, solubility, viscosity, patient populations, and instructions for cleaning, reuse, and storage.

163  
164 Example 1: The directions for use on the bottle and/or carton specify teaspoon measures  
165 to describe the dosing amount; the dosage cup that is supplied with the product bears  
166 three different graduated scales (one is a combined scale of  
167 teaspoonfuls/dessertspoonfuls/tablespoonfuls; the second provides metric measurements  
168 (cc/ml); and, the third is a combined scale of fluid ounces and drams) (see Appendix A,  
169 Illustration #1).

170  
171 Example 2: The directions for use on the bottle and/or carton specify teaspoon measures  
172 to describe the dosing amount; the dosage cup provided with the product bears two  
173 different graduated scales (one is a combined scale of teaspoonfuls/tablespoonfuls with  
174 juxtaposed conversions to milliliters (Note: the illustration also has a dessertspoon  
175 marking); the second is a combined scale of milliliters and fluid ounces) (see Appendix  
176 A, Illustration #2).

177  
178 The Agency also recommends that the dosage delivery device for a drug product provide  
179 markings that can readily measure the dosage indicated by the directions on the bottle and/or  
180 carton labeling. Again, the following examples illustrate situations that would render the  
181 products misbranded:

182  
183 Example 3: The directions for use on the drug product’s bottle and/or carton specify a 2-  
184 teaspoonful dose (see Appendix A, Illustration #3); the dosage cup does not bear a  
185 corresponding 2-teaspoonful graduation (See Appendix A, Illustration #1).

186  
187 Example 4: The directions for use on the drug product’s bottle and/or carton specify 1/2-  
188 teaspoonful dose (see Appendix A, Illustration #3); the dosage cup does not bear a  
189 corresponding ½-teaspoonful graduation (see Appendix A, Illustration #4).

190  
191 In addition to the scenarios described above, FDA is concerned about products that include a  
192 dosage delivery device and provide directions for use that state:

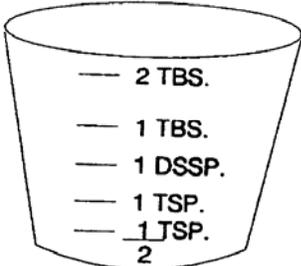
193  
194 *Under 2 [or 6, etc.] years of age: consult a physician*

195  
196 The Agency recommends that the labeling for these types of products include a prominent  
197 statement that directs consumers to consult their pharmacist or healthcare provider for any  
198 appropriate additional dosage delivery device necessary for use when a physician recommends a  
199 dose that is different than the doses that appear on the dosage delivery device that accompanies  
200 the product.

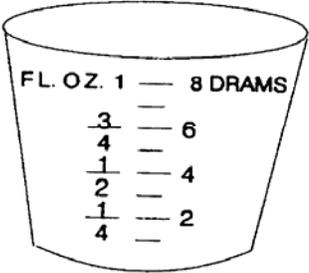
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**APPENDIX A: EXAMPLES OF DOSAGE CUPS THAT DO NOT CORRESPOND TO DOSING DIRECTIONS**

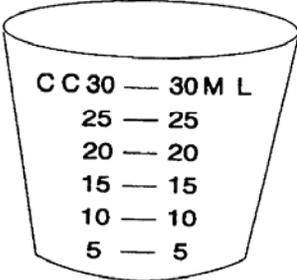
**DOSAGE CUP  
ILLUSTRATION #1**



**SIDE A**



**SIDE B**

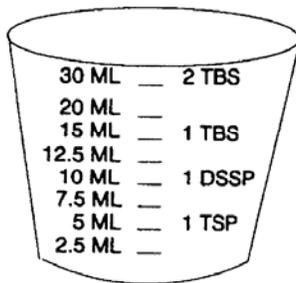


**SIDE C**

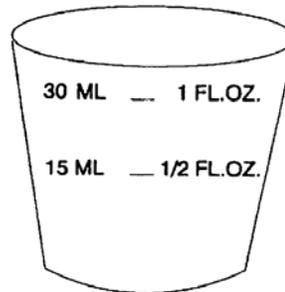
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**DOSAGE CUP**  
**ILLUSTRATION #2**



**SIDE A**



**SIDE B**

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## BOTTLE AND/OR CARTON LABELING

### ILLUSTRATION # 3

I

#### ***Drug Facts (continued)***

##### ***Directions***

- do not take more than **6 doses** in any 24 hour period
- use only with enclosed measuring cup. Do not use with any other device
- dose as follows

adults and children 12 years of age and older	2 teaspoons every 4 hours
children 6 to 12 years of age	1 teaspoon every 4 hours
children 2 years to 6 years of age	1/2 teaspoon every 4 hours.
children under 2 years of age	do not use

##### ***Other information***

- store at 20 - 25°C (68 - 77°F)
- alcohol free

***Inactive ingredients:*** (established names of each inactive ingredient listed in alphabetic order)

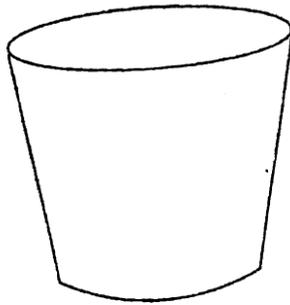
***Questions?*** call weekdays 9 AM to 5 PM EST at **1-800-XXX-XXXX**

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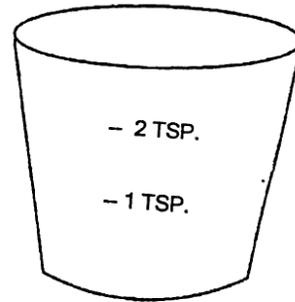
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# DOSAGE CUP

## ILLUSTRATION # 4



**SIDE A**



**SIDE B**

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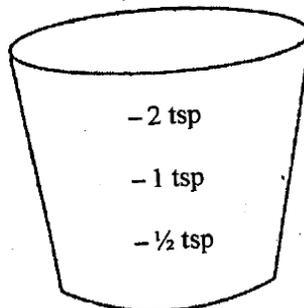
**APPENDIX B: EXAMPLE OF DOSAGE CUP THAT CORRESPONDS TO DOSING DIRECTIONS**

The example below illustrates a dosage cup that corresponds to the dosing directions described in the drug facts panel below.

**BOTTLE AND/OR CARTON LABELING**

<b><i>Drug Facts (continued)</i></b>	
<b><i>Directions</i></b>	
<ul style="list-style-type: none"><li>do not take more than <b>6 doses</b> in any 24 hour period</li><li>use only with enclosed measuring cup. Do not use with any other device</li><li>dose as follows</li></ul>	
adults and children 12 years of age and older	2 teaspoons (tsp) every 4 hours
children 6 to 12 years of age	1 teaspoon (tsp) every 4 hours
children 2 years to 6 years of age	½ teaspoon (tsp) every 4 hours.
children under 2 years of age	do not use
<b><i>Other information</i></b>	
<ul style="list-style-type: none"><li>store at 20 - 25°C (68 - 77°F)</li><li>alcohol free</li></ul>	
<b><i>Inactive ingredients:</i></b> (established names of each inactive ingredient listed in alphabetic order)	
<b><i>Questions?</i></b> call weekdays 9 AM to 5 PM EST at <b>1-800-XXX-XXXX</b>	

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